

Amendments to the Specification:

Please amend the paragraph starting at page 2, line 3 and ending at page 2, line 6 to read, as follows.

For convenience, a description will be made taking as an example an image forming apparatus such as an electrophotographic copying machine, a printer, or a fax machine.

Please amend the paragraph starting at page 2, line 21 and ending at page 3, line 6 to read, as follows.

The heating roller type employs a heating apparatus that heat-fixes an unfixed toner image to a surface of a recording material by including: a fixing roller (heating roller) and a pressure roller, which constitute ~~compose~~ a rotating roller pair; a heat source such as a halogen lamp built within the fixing roller so as to heat a portion to or control its temperature at a predetermined fixing temperature; and a press-contact nip portion (fixing nip portion) between the rotating roller pair through which the recording material as a heating material (a material to be heated), on which the unfixed toner image is formed and carried, is introduced, nipped, and conveyed.

Please amend the paragraph starting at page 4, line 26 and ending at page 5, line 2 to read, as follows.

The above-mentioned ~~above~~ circumstances have created a demand for a fixing apparatus with reduced rising time and without an image defect such as an uneven gloss occurring due to uneven heating.

Please amend the paragraphs starting at page 6, line 24 and ending at page 7, line 5 to read, as follows.

The control temperature of the heating member is decreased before the discharging of the heating material from the nip is completed, ~~completes~~; that is, the control temperature of the heating member is recovered before discharging the heating material. Accordingly, while the heating material is not inserted, the temperature of the rotary member can be prevented from increasing.

According to the above-mentioned ~~above~~ actions, there can be provided an image forming apparatus in which image non-uniformity such as uneven gloss is not generated even if the heating apparatus is used as an energy-saving fixing apparatus with shorter rising time.

It is preferable that after the insertion of the heating material in the nip starts, the temperature control means increases ~~increase~~ the control temperature of the heating member within L/V , where L is assumed as a distance from the nip to the portion of the rotary member surface to be heated by the heating member along a rotating direction of the rotary member, and V is assumed as tangential speed for rotation of the rotary member.

Please amend the paragraphs starting at page 7, line 22 and ending at page 8, line 14 to read, as follows.

It is preferable that the temperature control means decreases ~~decrease~~ the power supplied to the heating member before discharging of the heating material from the nip is completed. ~~completes~~:

It is preferable that after the insertion of the heating material in the nip starts, the temperature control means increases ~~increase~~ the power supplied to the heating member within L/V , where L is assumed as a distance from the nip to the portion of the rotary member surface to be heated by the heating member along a rotating direction of the rotary member, and V is assumed as tangential speed for rotation of the rotary member.

It is preferable that the heating member heat the rotary member surface through a film, and that the temperature control means includes ~~include~~ temperature detecting means that is in contact with a film surface opposite to a film surface contacting the rotary member in a portion in which the film contacts the rotary member surface.

Please amend the paragraph starting at page 8, line 23 and ending at page 8, line 27 to read, as follows.

It is preferable that heating member includes ~~include~~ a ceramic heater as a heating source, and that the temperature detecting means of the temperature control means be disposed to a back surface of the ceramic heater.

Please amend the paragraph starting at page 11, line 16 and ending at page 11, line 22 to read, as follows.

The image forming apparatus includes a photosensitive drum (image bearing member) 11 of an electrophotographic process which is composed of an organic photosensitive member. The photosensitive drum (image bearing member) 11 is driven to rotate counterclockwise ~~clockwise~~ as indicated by an arrow at a predetermined process speed (peripheral speed) V ($= 120 \text{ mm/sec}$).

Please amend the paragraphs starting at page 13, line 10 and ending at page 14, line 14 to read, as follows.

The above-described ~~above~~ process cycle including charging, scanning and exposure, development, primary transfer, and cleaning is sequentially executed for respective color separation component images of the target full-color image, that is, a second color separation component image (for example, magenta component image by the action of a magenta developing device 14M), a third color separation component image (for example, cyan component image by the action of a cyan developing device 14C), and a fourth color separation component image (for example, black component image by the action of a black developing device 14BK). Then, four-color toner images in total, that is, the yellow toner image, a magenta toner image, a cyan toner image, and a black toner image, are sequentially transferred onto the intermediate transfer drum 16 surface. Thus, the four-color toner images are composited to form a color image corresponding to the target full-color image.

The intermediate transfer drum 16 has a medium-resistivity resilient layer and a high-resistivity surface layer on a metal drum. The intermediate transfer drum 16 is driven to rotate clockwise ~~counterclockwise~~ as indicated by an arrow at approximately the same peripheral speed as the photosensitive drum 11 while being in contact with or proximate to the photosensitive drum 11. The metal drum is applied with a bias potential to produce a potential difference with respect to the photosensitive drum 11 so as to transfer the toner image on the photosensitive drum 11 side onto the intermediate transfer drum 16 surface side.

Please amend the paragraphs starting at page 16, line 5 and ending at page 17, line 4 to read, as follows.

Compared to such a full-color image forming operation, during mono-color image forming operation, only the black developing device 14BK is operated without switching the developing devices. The next page image can be continuously formed on the intermediate transfer drum 16, and a series of image forming operations are ~~operation is~~ performed while the transfer roller 15 and the cleaner 18 is in abutment with the intermediate transfer drum 16. Therefore, an image can be formed in the mono-color image forming about four times as fast as in the full-color image forming. The recording speed according to this embodiment is 4 pages (A4 size) per minute in the full-color image forming and 16 pages per minute in the mono-color image forming. By repeating the above operation, the image forming can be continuously performed. Fig. 11 is an operation bar chart of the image forming apparatus.

A) Multi-pre-rotation ~~Multi-pre-rotation~~ step

A multi-pre-rotation ~~multi-pre-rotation~~ step corresponds to a starting (activating) operation period (warming period) for the image forming apparatus. By turning on a main power switch of the image forming apparatus, a main motor of the image forming apparatus is activated to execute preparation operations ~~operation~~ for the necessary process devices.

Please amend the paragraph starting at page 17, line 13 and ending at page 17, line 17 to read, as follows.

A pre-rotation step, which [[step]] corresponds to a period during which the main motor is driven again in response to the input of a print job starting signal and print job pre-operations ~~pre-operation~~ for the necessary process devices, ~~devices~~ is executed.

Please amend the paragraphs starting at page 17, line 25 and ending at page 18, line 8 to read, as follows.

Note that in the case where the print job starting signal is inputted in the multi-pre-rotation ~~multi-pre-rotation~~ step of the above paragraph A, the multi-pre-rotation ~~multi-pre-rotation~~ step is followed by the pre-rotation step, skipping the stand-by of the above paragraph B.

D) Execution of print job

After the predetermined multi-pre-rotation ~~multi-pre-rotation~~ step ends, the image forming process is subsequently executed and the image-formed recording material is outputted.

Please amend the paragraph starting at page 22, line 14 and ending at page 23, line 6 to read, as follows.

In a state where: the fixing roller 1 is driven to rotate; the pressure roller 3 and the heating film 2a of the surface-heating unit 2 are rotated; and power is supplied to the ceramic heater 2b of the surface-heating unit 2 to heat and control the surface temperature of the fixing roller 1 to reach and stay at a predetermined fixing temperature, a recording material P bearing an unfixed toner image t as a heating material is introduced into the

fixing nip N1 between the fixing roller 1 and the pressure roller 3. Then, the recording material P passes the fixing nip N1 along with the fixing roller 1 in close contact with an outer surface of the fixing roller 1. While passing the fixing nip N1, the toner image t is heated by heat conduction from the fixing roller 1, thereby being subjected to heat-fixing of toner image. The recording material P that has passed the fixing nip N1 is separated from the outer surface of the fixing roller 1 on a recording material exit side, and further conveyed.

Please amend the paragraph starting at page 24, line 17 and ending at page 24, line 18 to read, as follows.

Hereinbelow, a description is made of operation of this embodiment along a flowchart ~~flow chart~~ of Fig. 12.

Please amend the paragraph starting at page 24, line 27 and ending at page 25, line 8 to read, as follows.

C) In the case of a continuous printing operation, to prepare for the next recording material, the target temperature is switched from T2 back to T1 a time s2 before the timing when the recording material P is discharged from the fixing nip N1. The time s2 is a time required for the fixing roller 1 to rotate by a distance from the heating nip N2 to the fixing nip N1. The operation prevents the fixing roller 1 from being overheated during the paper interval step.

Please amend the paragraph starting at page 29, line 5 and ending at page 29, line 12 to read, as follows.

Note that in this embodiment, a film heating type that is high in temperature increase rate is shown as an example. In the case of using the heating means having a large heat capacity which requires time for a temperature increase, the same effects as this embodiment can be obtained by switching over the target temperature earlier by the time required for the temperature increase.

Please amend the paragraph starting at page 29, line 27 and ending at page 30, line 11 to read, as follows.

In the case of the fixing apparatus 10 of this embodiment, as shown in Fig. 7, a film guide surface shape is provided to the heater holder 2c so as to form a film extended contact portion C1 in which the heating film 2a contacts the surface of the fixing roller 1 additionally on an upstream side of the ceramic heater 2b (heating nip N2) in the surface-heating unit 2 in a fixing roller rotating direction. That is, the heating film 2a is guided by the heater holder 2c, and contacts the fixing roller 1 in the heating nip N2 and in the film extended contact portion C1 [[on the]] further upstream.

Please amend the paragraph starting at page 30, line 20 and ending at page 30, line 27 to read, as follows.

According to a temperature detecting method using the above-described above arrangement, a temperature decrease of the fixing roller 1 due to the paper passing is reflected on the detection temperature, so that the power supplied to the ceramic heater 2b

is easy to get feedback from the deviation from the target temperature. Thus, the heat supplying capacity of the fixing roller 1 can be further maintained to be uniform.

Please amend the paragraphs starting at page 32, line 3 and ending at page 32, line 27 to read, as follows.

Fig. 9 is a cross-sectional schematic diagram of the fixing apparatus 10 according to Embodiment 2. The fixing apparatus 10 of this embodiment and the above-described ~~above~~ fixing apparatus 10 shown in Fig. 1 are compared with each other, and have the same structure except the positional difference of the thermistor 5 and the temperature control.

That is, the fixing apparatus 10 of this embodiment, the film guide surface shape is provided to the heater holder 2c so as to form a film extended contact portion C2 in which the heating film 2a contacts the surface of the fixing roller 1 on a downstream side of the ceramic heater 2b (heating nip N2) in the fixing roller rotating direction. The heating film 2a is guided by the heater holder 2c, and contacts the fixing roller 1 in the heating nip N2 and in the film extended contact portion C2 ~~on the~~ further downstream. In addition, in the film extended contact portion C2 of the surface-heating unit 2, the thermistor 5 as the temperature detecting means is provided by being constantly abutted by a pressure spring or the like against the film surface of the heating film 2a opposite to the surface contacting the fixing roller 1, that is, the film inner surface (back surface) thereof.

Please amend the paragraph starting at page 33, line 9 and ending at page 33, line 23 to read, as follows.

On the other hand, at the time s_1 when the heating nip N_2 is reached by the portion of the fixing roller 1 that contacts the leading edge of the recording material P, the thermistor 5 cannot detect its temperature decrease. At this timing, the target temperature is changed from $T_5 = 180^\circ\text{C}$ to $T_6 = 200^\circ\text{C}$. Note that the timing can be accurately predicted based on the time taken for the recording material P to reach the fixing apparatus 10 since the start of paper feeding. Further, at the time s_3 when the thermistor 5 is reached by the portion of the fixing roller 1 that contacts the leading edge of the recording material P, the target temperature is changed to $T_7 = 230^\circ\text{C}$, thereby maintaining the heat supplying capacity of the fixing roller 1.

Please amend the paragraph starting at page 35, line 20 and ending at page 36, line 2 to read, as follows.

d) The heating apparatus according to the present invention is not limited to an image heating and fixing apparatus according to the above-described embodiments, but may be widely used as means or an apparatus for heating a heating material such as: an image heating apparatus for heating a recording material bearing an image to reform surface properties including gloss, an image heating apparatus for temporary fixing, a heating and drying apparatus for a heating material, and a heat laminating apparatus.